

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) An apparatus comprising:

an implantable transducer; and

a physiological sensor that includes at least one biocompatible body, the body sized and shaped to be implanted within a myocardium of a subject ~~to contact tissue~~, at least a portion of the body including a material having at least one physical property that changes in response to a physiological condition ~~of the subject when that portion of the body is implanted in contact with the tissue~~, wherein the change in the at least one physical property ~~occurs because of the contact between that portion and the tissue~~ is responsive to at least one of a change in pH or a change in an ion concentration, wherein the portion of the body is sized and shaped such that the change in the physical property is chronically detectable using acoustic energy supplied by the implantable transducer to provide an indication of the physiological condition.

2. (Original) The apparatus of claim 1, in which the change in the physical property includes a change in size.

3. (Original) The apparatus of claim 1, in which the change in the physical property includes a change in stiffness.

4. (Original) The apparatus of claim 1, in which the change in the physical property includes a change in acoustic reflection from the body.

5. (Original) The apparatus of claim 1, in which the change in the physical property includes a change in acoustic transmission by the body.

6. (Original) The apparatus of claim 1, in which the change in the physical property includes a change in acoustic attenuation by the body.

7. (Currently Amended) The apparatus of claim 1, in which the body is sized and shaped to be ~~introduced within a myocardium of a subject~~ less than or equal to 50 micrometers in diameter.

8. (Original) The apparatus of claim 1, in which the body includes a sphere.

9. (Original) The apparatus of claim 1, in which the body comprises at least a portion of a catheter.

10. (Canceled)

11. (Currently Amended) The apparatus of claim 10, further comprising an acoustic receiver to receive acoustic energy from at least one of the body and the ~~tissue~~ myocardium to detect the change in the physical property of the body in response to the change in the physiological condition of the subject.

12. (Original) The apparatus of claim 11, further comprising a signal processor circuit coupled to the acoustic receiver.

13. (Original) The apparatus of claim 12, further comprising a user interface, coupled to the signal processor circuit, the user interface comprising a display that includes at least one indicator that includes information about at least one of the change in the physiological condition and the change in the physical property.

14. (Original) The apparatus of claim 13, in which the user interface includes an external programmer.

15. (Original) The apparatus of claim 13, in which the user interface includes a computer that is communicatively coupled to the signal processor circuit at least in part over a computer network or telephony network.

16. (Original) The apparatus of claim 1, in which the at least one biocompatible body is pH sensitive.

17. (Original) The apparatus of claim 1, in which the at least one biocompatible body is ion selective.

18. (Currently Amended) A system comprising:

a plurality of biocompatible spheres, each sphere sized and shaped to be disposed introduced within ~~and to contact~~ a myocardium of a subject, each sphere including at least one physical property that changes in response to a physiological condition of the subject ~~as a result of the contact with the myocardium, the at least one physical property being responsive to at least one of a change in pH or a change in an ion concentration;~~

an implantable acoustic transmitter, to provide energy to the spheres and the myocardium; and

an acoustic receiver, to receive energy from at least one of the spheres and the myocardium, wherein the change in the at least one physical property is chronically detectable using the energy to provide an indication of the physiological condition.

19. (Currently Amended) A method comprising:

introducing a physiological sensor within a myocardium of a subject, the physiological sensor that includes at least one body ~~into contact with a tissue, wherein the body includes having~~ at least one physical property that changes ~~as a result of the contact with the tissue in response to a physiological change associated with the tissue~~ at least one of a change in pH or a change in an ion concentration;

transmitting acoustic energy to the body and the ~~tissue~~ myocardium, the acoustic energy transmitted using an implantable transducer;

receiving transmitted acoustic energy for detecting the change in the physical property of the body; and

detecting and providing an indication of the physiological change by chronically detecting the change in the physical property of the body.

20. (Original) The method of claim 19, in which the introducing the at least one body includes introducing at least one pH sensitive body.
21. (Original) The method of claim 19, in which the introducing at least one body includes introducing at least one ion sensitive body.
22. (Original) The method of claim 19, in which the physical property that changes is a size of the body.
23. (Original) The method of claim 19, in which the physical property that changes is a stiffness of the body.
24. (Original) The method of claim 19, in which the physical property that changes is an acoustic reflection of the body.
25. (Original) The method of claim 19, in which the physical property that changes is an acoustic transmission of the body.
26. (Original) The method of claim 19, in which the physical property that changes is an acoustic attenuation of the body.
27. (Original) The method of claim 19, in which the detecting the change in the physical property of the body comprises detecting an acoustic reflection of the body.
28. (Original) The method of claim 19, in which the detecting the change in the physical property of the body comprises detecting an acoustic transmission of the body.
29. (Original) The method of claim 19, in which the detecting the change in the physical property of the body comprises detecting an acoustic attenuation of the body.

30. (Original) The method of claim 19, in which the introducing the at least one body includes introducing at least one sphere.

31. (Original) The method of claim 19, in which the introducing the at least one body includes introducing a catheter.

32. (Currently Amended) The method of claim 19, in which the introducing the at least one body includes introducing [[the]] at least one body ~~into a myocardium~~ sized and shaped to be less than or equal to 50 micrometers in diameter.

33. (Canceled)

34. (Original) The method of claim 19, in which the detecting the physiological change using the detected change in the physical property of the body comprises detecting ischemia using the detected change in the physical property of the body.

35. (Currently Amended) The method of claim 19, in which the detecting the physiological change using the chronically detected change in the physical property of the body comprises detecting blood flow using the chronically detected change in the physical property of the body.

36. (Previously Presented) The method of claim 19, further comprising introducing a catheter for at least one of the transmitting the acoustic energy and the receiving the acoustic energy.

37. (Previously Presented) The apparatus of claim 1, in which the material includes at least one electrical property that changes in response to a physiological condition.

38. (Previously Presented) The apparatus of claim 1, in which the body is sized and shaped to be introduced within a vein or artery of a subject.

39. (Previously Presented) The system of claim 1, wherein the physical property changes in response to a physiological condition that is predictive of a tachyarrhythmia.
40. (Previously Presented) The system of claim 18, comprising an implantable medical device including a state that is altered using a change in the physical property.
41. (Previously Presented) The apparatus of claim 18, further comprising a controller circuit coupled to the acoustic receiver.
42. (Previously Presented) The apparatus of claim 41, further comprising an external interface, coupled to the controller circuit, the external interface configured to receive information based on the change in the physical property.
43. (Currently Amended) A system comprising:
a physiological sensor that includes one or more biocompatible bodies, the one or more bodies sized and shaped to be implanted within a myocardium of a subject to contact tissue, at least a portion of the one or more bodies including a material having at least one physical property that changes in response to a physiological condition ~~of the subject when that portion of the body is implanted in contact with the tissue~~, wherein the change in the at least one physical property ~~occurs because of the contact between that portion and the tissue~~ is responsive to at least one of a change in pH or a change in an ion concentration, and wherein the at least a portion of the one or more bodies is sized and shaped such that the change in the physical property is chronically detectable using acoustic energy to provide an indication of the physiological condition; and
an implantable medical device, including one or more acoustic transducers configured to provide acoustic energy to the one or more bodies and to receive responsive acoustic energy, the implantable medical device configured to detect and provide an indication of a change in the physiological condition by using the responsive acoustic energy to detect the change in the physical property of the one or more bodies.

44. (Previously Presented) The system of claim **43**, wherein the implantable medical device includes an intravascular lead that includes one or more acoustic transducers.

45. (Previously Presented) The system of claim **43**, comprising:
a first acoustic transducer, disposed within the implantable medical device; and
a second acoustic transducer, disposed on a lead or catheter coupled with the implantable medical device.

46. (Previously Presented) The system of claim **43**, wherein the implantable medical device includes a controller that initiates or modifies a therapy using the detected change in the physiological condition obtained from the responsive acoustic energy.

47. (Previously Presented) The system of claim **43**, wherein the implantable medical device includes a controller that is adapted to determine whether ischemia is present in response to a change in physical property obtained from the responsive acoustic energy.

48. (Previously Presented) The system of claim **47**, comprising:
multiple pacing electrodes disposed at different locations within a subject, the electrodes communicatively coupled with the controller; and
wherein the controller is adapted to modify the selected electrodes or timing of pacing pulses delivered by the electrodes in response to a determination of ischemia.